Al-Saudia Virtual Academy
Pakistan Online Tuition – Online Tutor Pakistan

M.A PREVIOUS ETERNAL ANNUAL EXAMINATION 2003
"ECONOMICS", PAPER-III
(ADVANCED ECONOMIC STATISTICS)

Time allowed: Three Hours   **Maximum Marks: 100**

Instructions: 1) Attempt any and only FIVE questions.
2) Question carries equal marks.

1.   'Marks obtained in a certain aptitude test by a group of students are arranged in the following table.

MARKS OUT OF 100	NO.OF STUDENTS.
40-44	12
45-49	30
50-54	35
55-59	45
60-64	40
65-69	35
70-74	25
75-79	15
80-84	10
85-89	03

(i)   Determine the mean and standard deviation Marks.

(ii)   Determine the cut-off mark at which 80 students, who secure the highest marks, will be selected for admission.

(iii)   Students earning more than (Mean+2S.D) marks are exempted from payment of tuition fee, what percent of students are exempted from payment of tuition fee, approximately.

2. For a group of 8 observations given as under

    X: 40   35   33   27   38   43   42   36

    i)   Determine the first three moments about 36 as origin.

    ii)   Determine the first three true moments and the B(i)

    iii)   Shift the origin of the first two moments obtain in above, to 35

    iv)   What are the values for the mean and standard deviation of the data?

3. The price (X) in rupees per dozen and the quantities (Y) supplied in baskets of 20 dozens eggs each are given below for 8 consecutive years.

    X: 12   15   17   18   22   25   27   30
    Y: 32   36   40   40   43   45   48   50

    Construct the two regression lines and predict the price, if 1100 dozens of eggs are supplied the next year. Also determine r^2, and interpret it.

4. Explain using examples or algebraic manipulations, the effect of arithmetic operations on the following.

    i)   Mean.

    ii)   Standard Deviation.

iii)   Coefficient of Skewness.
iv)   Coefficient of Variation.
v)   Coefficient of Correlation.

5. A)   Given below are the indices of production from 1995 through 2003 respectively, with 1995 as base. Shift the base of the indices to 2000.

100   105   108   110   118   125   132   128   130

b) From the following data construct the Marshall and Fisher indices for 2004 with 2000 as base.

ITEMS	Prices		Quantities.	
	2000	2004	2000	2004
A	10	16	08	15
B	16	20	10	10
C	50	100	05	03
D	10	12	12	20
E	25	20	15	30

c)   Given $r_{12} = r_{13} = 0.7$ and $r_{23} = -0.5$, determine $R_{1.23}$ and $R_{23.1}$

6. a)   A set of 10 observations found to have a mean 65 with a standard deviation 15, later on checking it is discovered that two observations 50 and 55 were mistakenly recorded, whereas the correct observation were 56 and 65. Find the corrected values for mean and variance.

b)   Given below are the quarterly sales, in million of rupees, of a firm, starting 3rd quarter of 2001 through the 3rd. quarter of 2003. Obtain the linear trend using least squares, isolate the seasonal trend.

Sales: 20   23   25   22   26   28   25   30   32

7. In a certain 15 minutes interval during peak hours 240 vehicles on the average with a standard deviation of 60 vehicles passed through an underpass. In the next 15 minutes period, what is the probability that.

i)   Less than 300 vehicles will pass through the underpass.
ii)   More than 350 vehicles will pass through the underpass.
iii)   Between 150 to 400 vehicles will pass through the underpass.
iv)   Exactly 200 vehicles will pass through the underpass.

8. A)   Write a short essay on the usefulness of statistics.
   B)   Explain the scientific methodology of primary data collection.